Nebraska's College and Career Ready Standards for Mathematics
Revision Process Overview

Nebraska Revised Statute 79-760.01 requires the State Board of Education to "develop a plan to review and update standards for reading, writing, mathematics, science, and social studies" every seven years. Content area standards that are measurable, appropriately rigorous, and scaffolded become the framework for locally determined curricula. Guided by local and national resources, including an evaluation of state standards by the Fordham Institute (2018), a group of Nebraska educators is working to revise the 2015 Mathematics standards, Nebraska's College- and Career-Ready Standards for Mathematics."

September 2021. The standards revision process began in the Fall of 2021 with Public Input Survey #1. The survey was disseminated through the Nebraska Department of Education (NDE) website and directly to groups including the Nebraska Mathematics Cadre, the Nebraska MTSS network, District Assessment Contacts, and District Curriculum Contacts. The survey was also sent to state and national mathematics experts identified by the NDE's Mathematics staff. State mathematics experts are individuals with specialized training in mathematics and who work closely and extensively with Nebraska educators. Likewise, the identified national mathematics experts have previously collaborated with both the NDE and Nebraska educators as well as conducted and published mathematics research.

October 2021. Public Input Survey #1 sought feedback on the 2015 Mathematics standards including the content, or the knowledge and skills students are expected to learn, and the rigor, or cognitive complexity, of the standards. The questions were organized into four grade bands—K-2, 3-5, 6-8, and 9-12, respectively, and responses were made either individually or in groups (i.e. ESU staff developers, a school mathematics department, etc.). The survey was open between October 22, 2021 and November 16, 2021 and received a total of 292 responses. The majority of respondents identified as educators (e.g. Pre-K-12 educators, school or district administrators, postsecondary education representatives) followed by parents and business/industry representatives. Educators and other stakeholders were also invited to provide input to nde.mathstandardsinput@nebraska.gov.

Next, the NDE began recruiting educators for revision teams. Invitations to apply were sent to Educational Service Units (ESUs), post-secondary institutions, the Nebraska Association of Teachers of Mathematics (NATM), and the Nebraska Mathematics Cadre (a statewide collaboration between the NDE and ESU math professionals) along with a request to share with educators. The NDE received 134 applications and used a rubric to assess applicants' qualifications. The rubric utilized a 4-point scale that evaluated educators' experiences with teaching, curriculum development, standards writing, and working with diverse groups of learners, i.e. special education and EL students. In addition, the NDE math staff determined applicants' geographic locations, i.e. rural, urban, and suburban districts in various regions of the state, to ensure writing team members represented Nebraska's diverse student population

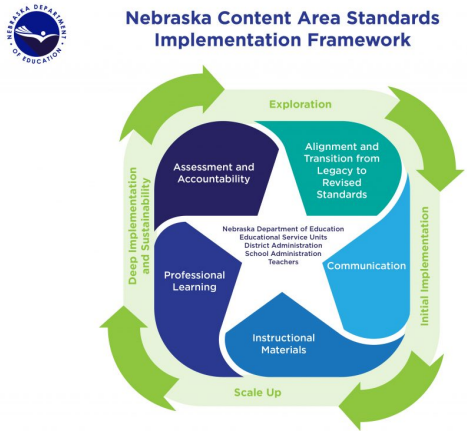
November 2021. Selection notifications were sent to applicants in early November. Revision team members will receive a stipend upon completion of the work in the amount of $600.00. Applicants who

had indicated their willingness to lead groups were then identified as team facilitators according to their grade-level experience. The role of the team facilitators is to organize meeting times and locations, provide an agenda to writing team members, track and maintain attendance, and communicate progress with other writing team members and the NDE staff. Team facilitators will receive a stipend of $750.00. Writing team members and team facilitators also signed an assurance document confirming their status as individual contractors.

Writing team members participated in an initial, virtual meeting on November 20th, 2021 in which they received an orientation to the revision process, previewed and discussed survey data, and began coordinating future meetings.

December. Throughout December, team facilitators with their revision team members as part of the planning and preparation phase. Members of the revision also began a book study, *Invigorating High School Math: Practical Guidance for Long-Overdue Transformation* by Steven Leinwand. In December, two stakeholder engagement sessions (K-5 and 6-12) were held with mathematics leaders from districts and ESUs. Meetings with the NDE staff (Cory Epler, Marissa Payzant, Deb Romanek, and Jane Strawhecker) are ongoing and occur weekly. This time is used to discuss considerations of the revision team, coordinate revision activities, and develop agenda items for future meetings.
December 13th marked the first meeting with subject matter experts from the Nebraska University system. This meeting allowed university subject matter experts to provide input relative to this guiding question: *What do students need to know and be able to do in order to be successful in postsecondary mathematics coursework without the need for remediation?*

January. The January weekly check-in meetings were also used to begin discussing possible standards rollout resources. The NDE would like to, as staff did for the revised English Language Arts standards, develop professional learning modules to support educators in the *Exploration* stage of implementation (see right). The modules would orient educators to the major revisions to structure and content, the instructional shifts, and considerations for initial implementation (SY 2022-23). A steering team, consisting of the NDE staff, ESU staff, and representation from Nebraska's MTSS, would design the professional learning series.



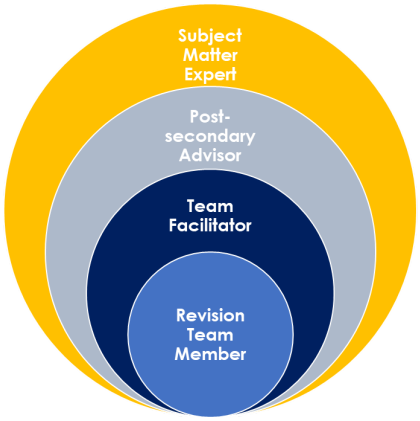
Throughout January, the revision teams continued to meet virtually. In addition, a meeting with subject matter experts from Nebraska's State Colleges took place on January 25th. This conversation allowed state college subject matter experts to provide input on this guiding question: *What do students need to know and be able to do in order to be successful in postsecondary mathematics coursework without the need for remediation?* Table 1 includes key considerations for the revision as of January 2022.

Next steps. The writing teams, working in grade band or alike-content teams, will meet regularly, both virtually and in-person, to continue reviewing and revising the mathematics standards, considering both public input survey data and supporting resources. Following a public release of a first draft in

April 2022, Public Input Survey #2 will open to collect feedback on the proposed draft. In addition, the NDE staff will identify and coordinate a series of "futuring panels." These create an opportunity for representatives from Nebraska's business and industry community to provide feedback on the draft. Employer engagement informs the revision team of the essential knowledge and skills employers seek from high school graduates entering the workforce.

The NDE staff will then identify members of an editing team, selected from the revision team, to prepare the next draft. These individuals will meet in the summer of 2022. Validation and sign-off from postsecondary education will also be procured in the summer months. The anticipated approval date for the revised College and Career Ready Standards for Mathematics is September, 2022.

Roles and responsibilities. NDE's Office of Teaching, Learning, and Assessment, which oversees the development of content standards, uses principles of the RAPID Model for its revision process. This model emphasizes the importance of establishing clear roles for those involved in decision-making within an organization.



This graphic illustrates the various roles of educators involved in the revision of content area standards. *Revision team members* (see pg. 6) are directly responsible for carefully reviewing the current standards while considering recommendations from various stakeholders. This team adds, removes, or revises standards and indicators based on their grade appropriateness, measurability, specificity, and scaffolding. These decisions determine the content of the final, approved document. *Team facilitators* coordinate the revision team meetings and establish channels of communication between the NDE and other team facilitators. *Post-secondary advisors* are university faculty who oversee mathematics education programs, and/or prepare pre-service teachers in one of Nebraska's 16 Educator Preparation Programs. The advisors provide feedback and expertise via multiple channels including surveys and collaboration with the NDE staff and revision team members. Their feedback is critical to the development of standards, as they help determine the extent to which the standards support college and career readiness for Nebraska's students. These individuals also share important updates to other faculty and pre-service teachers. *Subject matter experts* are engaged flexibly throughout the process. Subject matter experts provide feedback on key considerations for revision (see Table 1), review standards drafts, share content-specific research and resources, and communicate with other stakeholders during the process of revision.

Key Considerations. Writing team members have been engaged in activities and conversations that build their mathematics knowledge and help them develop a shared vision for mathematics education for Nebraska's K-12 students. Table 1 outlines key considerations for the revision that have emerged from collaborations amongst the educators involved in the process. A goal of the next phase is to establish recommendations that will shape the content, scope, and rigor of the revision.

Table 1

Nebraska's College and Career Ready Standards for Mathematics
Key Considerations (As of January 2022)

Considerations	Rationale
Identification of "big" mathematical ideas to consider reducing number of standards	Teachers indicate there is insufficient time to develop students' understanding of math concepts. Fewer, but more focused, standards may allow teachers and students time to develop conceptual understanding of key math ideas. A refined distribution of concepts would allow students to understand the "why" of a math concept and how to apply it in real-world contexts.
Grade 6-8 focus on ratios and proportional reasoning and arithmetic of rational numbers to build a strong foundation prior to high school	A shift in focus to these foundational concepts in the middle grades would better prepare students to be successful in high school Algebra courses.
Closely examine standards found in high school math to identify skills that may not be relevant to future learning	Public input survey data and feedback from revision teams and subject matter experts indicates the Advanced Algebra 2 course may not be beneficial to students. The first semester is typically a repeat of the full year Algebra 1 and the second semester contains topics that, with technology, may be outdated.
Strengthen the data strand across the standards K-12	A frequent theme of survey data and conversation thus far has been the need to develop standards related to understanding data and basic statistics. It is important to be able to collect, display and interpret data accurately.
Strengthen the process standards throughout the document	In past input from Nebraska business and industry leaders, the process standards reflected skills that were more important for their employees to have than the content of mathematics. The current format does not provide the emphasis that is desired.

The mathematics standards revision team is represented by the following:

Districts

- Omaha Public Schools
- Grand Island Public Schools
- Millard Public Schools

Elementary and Middle Schools

- Wahoo Public Schools
- Gretna Public Schools
- Hastings Public Schools
- Kearney Public Schools
- Papillion LaVista Public Schools
- DC West Community Schools
- Lincoln Public Schools
- Grand Island Public Schools
- Omaha Public Schools

High Schools

- Harvard Public Schools
- Scottsbluff Public Schools
- Columbus Public Schools
- Umoho Nation Public Schools
- Westside Community Schools
- Cambridge Public Schools
- Cross County Community Schools
- Thayer Central Community Schools
- Lexington Public Schools
- North Platte Public Schools
- Nebraska City Public Schools
- Fremont Public Schools

Educational Service Units

- ESU 8

Non-Public Schools

- Faith Christian School
- Creighton Preparatory School
- Boys Town High School

Nebraska Department of Education

- **Cory Epler, Ph.D.,** NDE Academic Officer
- **Marissa Payzant, Ed.D.,** Director - Content ARea Standards & Instruction
- **Deb Romanek**, Mathematics Education Specialist
- **Jane Strawhecker, Ph.D.,** Professor of Teacher Education, University of Nebraska Kearney

Members of the mathematics standards revision team, organized by work strand:

	Full Name	School / District (Role)	ESU
Gr K-2	Judy Stukenholtz	Wahoo Public Schools (Kindergarten teacher)	2
	Andrew Boone	Gretna Public Schools (1st grade teacher)	3
	Whitney Flower	Grand Island Public Schools (K-5 building principal)	10
	Adeline Johnson	Hastings Public Schools (2nd grade teacher)	9
	Sara Kucera	Kearney Public Schools (1st grade teacher)	10
Gr 3-5	Laura Melonis	Papillion-LaVista Public Schools (4th grade teacher)	3
	Janna Giles	DC West Community Schools (5th grade teacher)	3
	Jason Weseman	Grand Island Public Schools (5th grade teacher)	10
	Amy Barton	Lincoln Public Schools (3rd grade teacher)	18
	Marni Driessen	Omaha Public Schools (K-6 curriculum facilitator)	19
Gr 6-8	Tami Whitted	Millard Public Schools (6-12 math curriculum facilitator)	3
	Susan Christensen	Faith Christian School (4-8 math teacher)	10
	Kevin L Pettigrew	Valentine Community Schools (7-8 math teacher)	17
	Alicia K Davis	Lincoln Public Schools (8th grade math teacher)	18
	Mallory Charvat	Elkhorn Public Schools (7th grade math teacher)	3

	Rachel Kluthe	Seward Public Schools (7th grade math teacher)	6
HS Data	Jenne Gregor	Creighton Preparatory School (H.S. math teacher)	3
	Audrey Smalley	Harvard Public Schools (H.S. math teacher)	9
	Shelby Aaberg	Scottsbluff Public Schools (H.S. math teacher)	13
	Julie Kreikemeier	Columbus Public Schools (H.S. math teacher, math coach)	7
	Heidi Rethmeier	Educational Service Unit 8 (Staff developer)	8
HS Geom	Ann Marie Scott	Umonhon Nation Public Schools (H.S. math teacher)	1
	Michelle Mika	Boys Town High school (H.S. math teacher)	3
	Angela Mosier	Westside Community Schools (H.S. math teacher)	3
	Peter Bogardus	Cambridge Public Schools (H.S. math teacher)	11
	Jennifer Lange	Cross County Community Schools (H.S. math teacher)	7
HS Alg.	Deb Bulin	Thayer Central Community Schools (H.S. math teacher)	5
	Peg Fisher	Lexington Public Schools (H.S. math teacher)	10
	Sasha Welch	North Platte Public Schools (H.S. math teacher)	16
	Jason Bartman	Nebraska City Public Schools (H.S. math teacher)	4

	Alexander Way	Fremont Public Schools (H.S. math teacher)	2